BEACH SHELLFISH AQUACULTURE IN BC
AN ECONOMIC PROFILE

Prepared for:

Economic Development Branch
BC Ministry of Sustainable Resource Management

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BUILDING BLOCKS FOR ECONOMIC DEVELOPMENT & ANALYSIS

PREFACE

PURPOSE

Building Blocks have been conceived and developed by the Economic Development Branch of the Ministry of Sustainable Resource Management, under the guidance of Nancy South, Manager Economic Analysis, as an analytical tool that supports British Columbia coastal and land and resource use planning and decision-making and economic development initiatives. The Blocks contain concise business and sector information for a broad range of resource-based business types in BC. At this point, there are more than 30 Blocks either complete or in draft form. Several more Blocks have been identified as high priority by planning tables and other client groups. Additional Building Blocks will be developed over time, and some Blocks may be updated. For the most current Building Blocks, please see the Ministry of Sustainable Resource Management website, at: http://srmwww.gov.bc.ca/rmd/ecdev/

ACKNOWLEDGEMENTS

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BENEFITS

Building Blocks are expected to provide the following general benefits:

- Increase efficiency and more informed decision-making by providing readily accessible, credible information to planning and economic development processes;
- Improve the consistency of economic information across planning areas;
- Support economic analysis and decision-making that occurs outside formal coastal and land use planning processes; and
- Provide linkages between economic analysis and other social and environmental analytical tools (through identifying resource requirements to support economic activities and general compatibilities with other sectors and values).

LIMITATIONS

Every effort has been made to ensure that the information contained in Building Blocks is accurate and consistent. Approved, credible data sources are the foundation for Building Blocks. All Blocks were reviewed by sponsoring agencies and other experts. However, users are cautioned that information is used at their own risk, and that the authors and sponsors are not liable for any damages. Any conclusions or interpretations by the authors are not intended to represent government policy. Also, note that Building Blocks do not provide site specific information nor do they consider requirements for sustainability (social, community, environmental).

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RECOMMENDED REFERENCE/CITATION

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1.0 INTRODUCTION AND BACKGROUND

Multiple Account Evaluation (MAE) is a method for systematically displaying a broad range of impacts from resource development projects and land use planning scenarios. One important class of impacts is the Economic Development Account comprising sales, employment, government revenues, and other economic indicators.

The Ministry of Sustainable Resource Management is developing Economic Building Block Templates for various sectors to assist in the land use planning process. This short 10 day study presents a pilot Economic Building Block for "beach shellfish aquaculture."

The "beach shellfish aquaculture" sector is not well-defined or easily profiled. Three types of culture occur at or near the beach: bottom, near bottom, and deepwater. Bottom or beach culture occurs in the intertidal zone on the substrate bottom. Near bottom culture occurs in the intertidal zone but the culture activity takes place off the bottom, e.g., stake, rack, and bag. Deepwater culture refers to culture suspended in deep water or on the sea bed below the tide mark. The Ministry of Aquaculture, Fisheries and Food does not regulate, document, or analyse shellfish aquaculture using the three types of culture. Furthermore, several operators use a combination of techniques on a given tenure.

Therefore, The following Economic Building Block for beach shellfish aquaculture should be viewed as a pilot study. The Building Block has two components: a Sector Overview (Exhibit 1) and an Economic Profile (Exhibit 2).

In the future, the Ministry of Sustainable Resource Management and the Ministry of Fisheries, Food and Food may want to coordinate their efforts at profiling the important shellfish aquaculture industry and its key components.

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2.0 EXHIBIT 1: BEACH SHELLFISH AQUACULTURE – A PRELIMINARY SECTOR OVERVIEW

2.1 Overview

- Culture of manila clams (and a few littleneck clams) and Pacific oysters.
- Polyculture is common i.e., cultivating clams and oysters on the same site.
- Growout cycle is 1 to 5 years for oysters and 2 to 4 years for clams.
- Two main components of industry:
  - *Farming:* raising of animals from seed to market size (some operators have their own nursery)
  - *Processing:* shucking, cleaning, packaging, etc. for meat and whole products
- Mostly small business operations at farm level, although there is a wide range in scale and productivity/intensity of operations.
- Culture concentrated in three areas – Baynes Sound, Sunshine Coast, and Cortes Island/Desolation Sound.
- Processing concentrated at 4 or 5 plants on Lower East Coast of Vancouver Island.

2.2 Coast/Land Resources

- BC has good growing conditions, an extensive coastline with many protected areas.
- Access to foreshore with clean water, good circulation, and nutrients.
- Substrate composed of sand, gravel, mud, and shell mixture with a water temperature higher than 13 degrees Celsius for six months of the year.
- Urban encroachment and competing uses of coastline inhibit development in some areas e.g., conflict with viewscapes and access of upland property owners.
- An estimated 1,500 hectares under beach shellfish tenure in 2001 (includes a very small amount of near bottom culture).

2.3 Products

- Oysters — two main products:
  - shucked oysters sold by the gallon (main product)
  - single oysters sold in the half shell by the dozen (secondary product)
- Clams: sold in the shell by weight.

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2.4 Market

- Domestic and export (mainly US west coast) markets:
  - oysters: about 50% exported
  - clam: over 75% exported
- Markets are flat for shucked oysters, the main product from oyster beach culture, so producers are trying to shift to single oyster production.
- Markets for clams have been strong and growing.
- Significant potential for increased clam exports to US and Asian markets but realizing this potential is difficult since industry is comprised of mostly small producers.

2.5 Investment Requirements

- $40,000 per hectare investment at start-up (excluding land/tenure acquisition costs) for clam culture, much (up to half) less for oyster culture.

2.6 Infrastructure

- Generally few infrastructure requirements but need access to:
  - road network to truck product from processing plant to market
  - water and product testing facilities e.g., *e Coli*, PSP
  - hydro lines/power

2.7 Labour Market

- Local labour market, even in remote locations, can provide farm and plant labour.
- Many owner-operator and family operations.
- Harvesting is labour intensive and done mainly by contract harvesters for clams and by farm employees for oysters.
- Wage rates:
  - about $2,000 per month, in full time equivalents, for both farm and plant production labour (including payroll burden)
  - about $150 to $200 per day for contract clam harvesters

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2.8 Regulatory Regime

- Siting of shellfish farms conducted through the review and authorization of the Shellfish Management Plan (SMP) by provincial and federal governments:
  - Shellfish management plan
  - Crown land tenure
  - Commercial aquaculture license
  - Community Application for New Shellfish Aquaculture Tenures
  - Federal Navigable Waters Permit and *Canadian Environmental Assessment Act* (CEAA) review, if applicable
- Land and Water BC (LWBC) administers Crown Lands and respects the riparian rights of waterfront property owners.
- The provincial approval process takes 3 to 4 ½ months (140 days) but the federal reviews, if needed, can take up to 6 months.
- All bivalve shellfish (wild and farmed) must be processed in a federally approved and registered facility:
  - In 1992, the federal government introduced a Quality Management Program
  - Under this program, federal registered processors were requested to set up and monitor a HACCP-based (Hazard Analyses Critical Control Point) inspection program
  - Some mildly contaminated shellfish is "flushed" at a depuration plant
- The November 1998 Shellfish Development Initiative has helped to streamline the application/approval process for shellfish tenures.

2.9 Siting Attributes

- Good sites have:
  - High biophysical capability (salinity, phytoplankton, temperature etc)
  - High suitability (little conflict with other users)
  - Good logistics e.g. transport, hydro access
  - Good water quality i.e. no coliform/other contamination

2.10 Capacity for Growth

- Significant capacity for growth based on biophysical availability alone e.g., the Coopers & Lybrand study (1997) suggested that a doubling of the shellfish farm area was possible over 10 years.
- But, other user conflicts potentially restrict growth e.g., riparian rights holders, First Nations Issues.

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2.11 Government Revenues

- Provincial government revenues include:
  - $500 for a new shellfish tenure application (one time)
  - $4,500 management fee for successful application (one time)
  - $150 documentation fee (one time)
  - annual rent fee (normally $600 per tenure)
  - $290 licence fee for plants processing oysters & clams
- Property taxes based on Ministry of Provincial Revenue property assessments and local government assessment rates accrue to local governments or trusts.

2.12 Input Output Impacts

- Approximate distribution of purchases and factor inputs as share of processed product sales:

10%	seed purchases/costs
45%	labour inc. contract harvesting & office, wage to operator
23%	purchased inputs
2%	provincial, local government taxes/fees
20%	interest, depreciation, before tax profit
100%	

- 0.06 PYS direct employment per tonne product produced (farm & processing labour).
- Indirect (supplier related) and induced (consumer spending) impacts add 50% to 100% to employment impacts above.

Source: Estimates by GSGislason & Associates Ltd. based on BC Ministry of Agriculture, Food and Fisheries data, and based on data/information from other provincial government departments, available reports, and interviews.

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3.0 EXHIBIT 2: THE BEACH SHELLFISH AQUACULTURE INDUSTRY IN BC 2001 – A PRELIMINARY ECONOMIC PROFILE

	Total Industry 2001	2001 Industry Ratios Per		
		Operation	Hectare	Tonne Production
Number of Tenures	275	1.00	0.18	0.05
Tenure Area	1,500 hectares	5.5	1.00	0.26
Production				
Clams	1,400 tonnes	5	0.9	0.25
Oysters	4,300 tonnes	16	2.9	0.75
Total	5,700 tonnes	21	3.8	1.00
Product Value				
Farm Gate	$11.7 million	$43,000	$8,000	$2,100
Processing Margin	8.1 million	29,000	5,000	1,400
Wholesale Value	$19.8 million	$72,000	$13,000	$3,500
Wages & Benefits				
Farm Level	$ 6.0 million	$20,000	$4,000	$1,050
Processing	3.0 million	10,000	2,000	550
Total	$9.0 million	$30,000	$6,000	$1,600
Employment (PYs)[1]				
Farm Level	240	0.9	0.16	0.04
Processing	120	0.4	0.08	0.02
Total	360	1.3	0.24	0.06
Investment[2]	$40 million	$150,000	$25,000	$7,000
Government Revenues				
Provincial				
One Time Fees[3]	$0.2 million	$700	$130	$35
Annual Rent	$0.2 million	$700	$130	$35
Local Property Tax	$0.04 million	$150	$25	$7

Source: Estimates by GSGislason & Associates Ltd. based on BC Ministry of Aquaculture, Food and Fisheries data, and based on data/information from other provincial government departments, available reports, and interviews.

[1] Person Years
[2] Replacement cost excluding land/tenure purchase (farm level only)
[3] Application, management and documentation fees for tenures

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